

REMARKS

Claims 1-6 are currently pending in the present application.

The Examiner objects to the Specification due to various informalities as set forth in paragraph 1 of the Office Action. Applicants have amended the Specification to address the informalities cited by the Examiner. Specifically, the indefinite article “an” has been inserted as recommended by the Examiner, and each occurrence of “are preferable” has been corrected to read –preferable are--. No new matter has been introduced by the amendments to the Specification made herein. The amendments are made by replacement of entire paragraphs in accordance with 37 C.F.R. §1.121(b)(1). Entry of the Amendments to the Specification and removal of the Examiner’s objection to the Specification are respectfully requested.

In the Office Action, the Examiner objects to claims 1-6 due to the absence of the indefinite article “an” preceding the introduction of the phrase “engine cooling water system.” Applicants have amended claims 1-6 to insert the indefinite article --an--. Removal of the objection to the claims is respectfully requested.

In the Office Action, the Examiner rejects claims 1-6 under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Examiner contends that claim 1 is unclear because the recitation of a polyamide resin “comprising” components (A), (B) and (C), wherein (A), (B) and (C) are present in a total amount of 100% is allegedly contradictory. Additionally, the Examiner contends that claims 2 and 3 are unclear because the aromatic polyamide “comprises” two acid components present in a total amount of 100%. The Examiner contends that the use of the transitional phrase “comprising” with reference to components which total 100% is contradictory. The Examiner rejects claims 4-6 as being dependent upon a rejected base claim. Furthermore, the Examiner contends that claim 5 is indefinite because the claim contains a limitation drawn to both a composition and an article.

Applicants respectfully submit that the claimed invention is not indefinite. It is respectfully submitted that the original claim language was clear. However, in an effort to improve the clarity of the claims, Applicants have amended the claims as set forth above in the Listing of the Claims. Applicants submit that the claims, as amended, are in no way any

narrower than the original claims. The language concerning the percentage values set forth in amended claims 1-3 has essentially the same meaning as the language used in the original claims and is merely an alternative, and perhaps clearer, manner of wording the same.

Claim 1, as amended (and originally), is directed to a polyamide resin composition which comprises 100 parts by weight of a polyamide resin and from 5 to 150 parts by weight of an inorganic filler. The polyamide resin comprises components (A), (B) and (C). Each of components (A), (B) and (C) is present in a percent by weight amount as recited in the claim. The percent by weight amounts for components (A), (B) and (C) are based on the total combined weight of components (A), (B) and (C) and thus, equal 100% by weight on that basis. However, reference to a polyamide resin "comprising" components (A), (B) and (C) is set forth as such to make it clear that: (i) the aromatic polyamide of component (B), which is present in an amount of from 1 to 30% by weight, is not limited to a single aromatic polyamide; and (ii) other polyamides can be included in the overall composition. Components (A), (B) and (C) must be included in a mixing ratio to one another as set forth by way of the claimed percentages, and as explained in Applicants' Specification at page 8, lines 4-13. Applicants respectfully submit that it is not unclear or contradictory to refer to the polyamide resin "comprising" components (A), (B) and (C), wherein the percentage weights of components (A), (B) and (C) totals 100% based upon the combined total weight of the three components.

Claims 2 and 3 have been amended to make it more clear that the percentages refer to portions of an amorphous copolyamide resin which may comprise component (B). Accordingly, it is further clarified that component (B) may comprise more than one aromatic resin. A particular class of resin referred to in, for example, claim 2, is an amorphous copolyamide resin having from 40 to 95% by mole of a terephthalic acid component unit and from 5 to 60% by mole of a isophthalic acid component unit. The reference in the claim to the total content of the terephthalic acid component and the isophthalic acid component being 100% is not contradictory because the percentage refers to the amorphous copolyamide resin component which may comprise one of the aromatic polyamide resins present as component (B).

Similarly, in claim 3, Component (B), the aromatic polyamide resin, comprises an amorphous copolyamide resin which has from 99 to 60% by weight of an isophthalic- or

terephthalic-containing polyamide forming component and from 1 to 40% by weight of an aliphatic polyamide component. The reference to a total of 100% by weight refers to the claimed amorphous copolyamide resin which may comprise one aromatic polyamide present as component (B).

Applicants respectfully submit that in each instance, the use of a reference to a total of 100% in combination with the transitional phrase "comprising" is not contradictory and is in no way indefinite.

In claim 5, Applicants have amended the claim to refer to the antifreeze resistance value of the polyamide resin composition which is suitable for use in an automobile engine cooling water system. Thus, rather than simply noting the suitability of the polyamide resin for use in an automobile engine, the antifreeze resistance value of polyamide resins according to certain preferred embodiments of the invention is positively recited. As set forth in claim 5 as amended, the polyamide resin composition has an antifreeze resistance value greater than about 70%.

Applicants respectfully submit that the amendments to the claims made herein introduce no new matter. Support for the amendments to claims 2 and 3 can be found in the Specification, for example, at page 7, lines 6-22. Support for the amendments to claim 5 can be found in the Specification, for example, in Table 1 wherein the antifreeze resistance of several polyamide compositions according to present invention (Examples 1-3) and comparative polyamide resins (Comparative Examples 1-4) are set forth. The amendments made in claim 1 are supported in the original claim language of claim 1 and in the Specification at page 8, lines 4-13. No additional claims fees are necessitated by the amendments made herein. Furthermore, a listing of all claims ever presented in accordance with 37 C.F.R. §1.121(c)(1) is set forth herein. Accordingly, entry of the amendments to the claims made herein is proper and respectfully requested.

In view of the comments set forth above and in view of the amendment made to claim 5, Applicants respectfully submit that all pending claims comply with the requirements of 35 U.S.C. §112, second paragraph. Reconsideration and withdrawal of the rejections under §112, second paragraph, are respectfully requested.

In the Office Action, the Examiner rejects claims 1-6 under 35 U.S.C. §103(a), as being unpatentable over PCT Publication No. WO 95/20630 of Hayashi (hereinafter referred to as “Hayashi”), in view of U.S. Patent No. 5,795,931 of Katayama, *et al.* (hereinafter referred to as “Katayama”). Specifically, the Examiner contends that Hayashi discloses a polyamide composition which can be used in automotive cooling system parts, and that the polyamide resin composition comprises an inorganic filler and a polyamide resin containing an aromatic polyamide component and at least one other polyamide component which may be selected from a disclosed list of examples which includes nylon 66 and nylon 12. The Examiner acknowledges that Hayashi fails to teach the combination of nylon 66 and nylon 12.

However, the Examiner also contends that Katayama discloses an injection welding material with excellent calcium chloride resistance which comprises a polyamide resin mixture containing a copolymer of nylon 6 and nylon 66, in conjunction with an amount of nylon 12, and further combined with an inorganic filler. The Examiner argues that it would have been obvious to one of ordinary skill in the art to include nylon 12 in the composition disclosed in Hayashi, “because Katayama ‘931 discloses that the combination of nylon 66 and nylon 12 offsets the disadvantageous effects of calcium chloride on automobile parts that would occur if only one of [*sic*] nylons were used rather than both.” (See, the Office Action, page 6).

Applicants respectfully traverse the Examiner’s rejection and the arguments and contentions set forth in support thereof for the following reasons.

Applicants’ claimed invention is directed to a polyamide resin composition which comprises 100 parts by weight of a polyamide resin and (D) from 5 to 150 parts by weight of an inorganic filler, wherein the polyamide resin comprises:

- (A) from 50 to 98% by weight of nylon 66,
- (B) from 1 to 30% by weight of an aromatic polyamide resin, and
- (C) from 1 to 20% by weight of nylon 12.

It is well-settled that in order to establish a *prima facie* case of obviousness, the Examiner MUST satisfy three basic criteria. First, there must be some suggestion or motivation, in the references, to modify the reference or to combine reference teachings. It is NOT sufficient to say that the reference(s) can be modified, without a teaching or suggestion as to the

desirability of making the modification. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim elements. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure. (*See*, M.P.E.P. §2143).

The Examiner has acknowledged that Hayashi fails to teach the combination of nylon 66 and nylon 12. (*See*, the Office Action, page 5). Applicants agree that Hayashi fails to teach or suggest the combination of nylon 66, an aromatic polyamide resin and nylon 12, as claimed in Applicants' invention. The Examiner has not pointed to any teaching or suggestion in Hayashi to combine nylon 66 and nylon 12 with an aromatic polyamide, as claimed.

In an effort to remedy this deficiency of the Hayashi reference, the Examiner has argued that it would have been obvious to one of ordinary skill in the art to have incorporated nylon 12 into the composition disclosed in Hayashi on the basis of the teachings of the Katayama reference. Applicants respectfully submit that there is no teaching or suggestion in Katayama or Hayashi which would motivate one of ordinary skill in the art to select nylon 12 from Katayama and incorporate it into the compositions disclosed in Hayashi.

Katayama is directed to a polyamide resin composition which comprises a copolymer of polyamide 6 (nylon 6) and polyamide 66 (nylon 66), further combined with polyamide 12 (nylon 12) and an inorganic filler. Katayama references an improvement in the resistance to calcium chloride and an improvement in welding properties through use of the polyamide 6/66 copolymer.

However, Katayama specifically describes the inferior welding properties of polyamide 66 used alone and/or in combination with polyamide 12. Specifically, in Comparative Example 8 of the Katayama reference ("CE8"), it is shown that a combination of polyamide 12 in an amount of 20 parts by weight with polyamide 66 in an amount of 80 parts by weight results in a Weld Peeling Strength far inferior to the inventive examples wherein the copolymer of polyamide 6 and polyamide 66 is used in combination with polyamide 12. (*See*, Comparative Example 8 and Table 2 of Katayama).

The inferior welding strength of the injection welding material obtained in Comparative Example 8 of Katayama is likely due to the substantial lack of compatibility between nylon 66 and nylon 12 as described in Applicants' Specification at page 2, line 17 through page 3, line 1. As shown in Applicants' own Comparative Example 4, a combination of nylon 66 and nylon 12 in a ratio of 80 to 20 parts by weight exhibits a welding strength substantially lower than that of the inventive composition set forth in Examples 1 – 3. (See, Table 1 of Applicants' specification).

Thus, it is clear that the combination of nylon 66 and nylon 12 exhibits the disadvantage of poor weld strength characteristics. Katayama intended to solve the problem of poor weld strength by using a copolymer of nylon 6 and nylon 66 in combination with nylon 12, rather than the combination of nylon 66 and nylon 12 alone. Accordingly, it is not reasonable to suggest that one of ordinary skill in the art would read Katayama and envision the advantageous use of nylon 12 in combination with nylon 66, much less the use of the combination of nylon 12 and nylon 66 in conjunction with Hayashi. Moreover, there is nothing to suggest that one of ordinary skill in the art, upon reading Katayama, would be motivated to use nylon 66 in combination with nylon 12 and an aromatic polyamide as claimed.

Thus, Applicants submit that the Examiner has failed to establish a *prima facie* case of obviousness based upon Hayashi and Katayama, as neither reference, nor a combination thereof, teaches or suggests the claimed combination of nylon 66, nylon 12 and an aromatic polyamide in the percentage amounts set forth in Applicants' pending claims. Additionally, as set forth above, there is no teaching or suggestion in either Katayama or Hayashi which would motivate one of ordinary skill in the art to selectively combine nylon 12, based on Katayama, with the compositions disclosed in Hayashi, as suggested by the Examiner in order to arrive at Applicants' claimed invention. As the Examiner is aware, it is not sufficient to say that the references can be combined, without a teaching or suggestion in the references to make the combination necessary to arrive at Applicants' claimed invention. Lastly, given the recognized drawbacks of nylon 66/nylon 12 combinations as described in Katayama, one of ordinary skill in the art would have no reasonable expectation of success.

Therefore, Applicants submit that the combination of Hayashi and Katayama does not satisfy the requirements for establishing a *prima facie* case of obviousness and respectfully request that the rejection of claims 1-6 on that basis be withdrawn.

In the Office Action, the Examiner also rejects claims 1-6 under 35 U.S.C. §103(a), as being unpatentable over Hayashi in view of Japanese Publication No. 57-080448 (hereinafter referred to as "JP '448"). Specifically, the Examiner contends that Hayashi teaches the claimed invention except for any reference to a combination of nylon 66 and nylon 12. However, the Examiner contends that JP '448 discloses a polyamide composition which improves the resistance of the resultant article to stress cracking and which comprises nylon 66, nylon 12 and glass fibers. Accordingly, the Examiner argues that it would have been obvious to one of ordinary skill in the art to include nylon 12 in the composition disclosed by Hayashi.

Applicants respectfully traverse the Examiner's rejections in the arguments and contentions set forth in support thereof for the following reasons.

As described above, Applicants submit that the combination of nylon 66 and nylon 12 is known to result in inferior weld strength properties. As shown in Applicants' Specification at Table 1 and as explained above with reference to Katayama, Comparative Example 4 evidences that while an article incorporating an 80/20 combination of nylon 66 and nylon 12 does not crack as a result of exposure to calcium chloride, both the weld line strength (81 MPa) and the antifreeze resistance value (65%) are inferior to the inventive combination comprising nylon 66, nylon 12 and an aromatic polyamide resin, as claimed.

Applicants respectfully submit that there is no teaching or suggestion in either Hayashi or JP '448 which would motivate one of ordinary skill in the art to selectively incorporate nylon 12 into a composition comprising nylon 66 and an aromatic polyamide resin as claimed. Moreover, given the express teachings of Katayama which disclose an inferior weld strength resulting from the combination of nylon 66 and nylon 12, one of ordinary skill in the art could not reasonably be held to have an expectation of successfully achieving a composition with a satisfactory weld strength by incorporating nylon 12 into a composition comprising nylon 66.

Thus, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness based upon the combination of Hayashi and JP '448. Accordingly, reconsideration and withdrawal of the rejection of claims 1-6 under 35 U.S.C. §103(a), are respectfully requested.

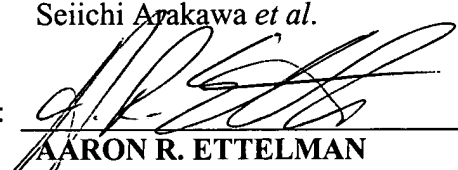
In view of the amendments and remarks made herein, Applicants respectfully submit that all pending claims fully comply with the requirements of 35 U.S.C. §112. In view of the remarks set forth above, Applicants submit that all pending claims patentably distinguish over the prior art to record and know to Applicants. Reconsideration, withdrawal of all objection and rejections and a Notice of Allowance are respectfully requested.

Respectfully submitted,

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March 20, 2006
(Date)

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